Agricultural Experiment Stations in the United States and elsewhere.

THIS is the time of year when prospectuses and calendars of Technical Colleges, Schools, and Institutes are received from various parts of the country in such numbers that it is impossible to do justice to them in a short note. Several publications of this character recently received must, however, be mentioned. The Northampton Institute, Clerkenwell, the principal of which is Dr. R. M. Walmsley, has greatly developed, and has commenced a set of day courses in mechanical engineering, electrical engineering and horological engineering. These courses have already been announced in NATURE, and their scope described. Other changes tending to the greater efficiency of the Institute have been introduced. A noteworthy point is that in many parts of the prospectus notes are given which should be of real value in making students understand what true education means, and in directing their energies in proper channels. The notes are in complete accord with rational methods of instruction.

THE Merchant Venturers' Technical College at Bristol has for many years been prominent among the the technical schools of the country. It aims at providing a sound, continuous, and complete preparation for an industrial career, and has developed with the times. Among recent improvements mentioned in the calendar we notice that a much larger physical laboratory has been equipped and will be opened this session, and also an additional special laboratory for heat and mechanical physics.

THE prospectus of the Municipal Science, Art and Technical Schools of Devonport has been received. Remembering the tendency of students to skim over many subjects, instead of concentrating their attention on a few, we are glad to see among the regulations of the school the following note:—"Students are strongly advised not to attempt more than three subjects, one of which should be practical geometry or mathematics, and they should consult the teacher as to the course of study most suitable to their profession."

THE Municipal Technical School of Manchester is one of the finest in the country, and its syllabus for the session 1900-1901 is proportionally attractive. The following extract from the syllabus shows the relation of the work of the school to that of a University College. "The chief object of the school is to provide instruction in the principles of those sciences which bear directly or indirectly upon our trades and industries, and to show by experiment how these principles may be applied to their advancement. The aim of the school is distinct from that of the University Colleges, inasmuch as it is designed to teach science solely with a view to its industrial and commercial applications, and not for the purpose of educating professional scientific men. It, however, offers to students of the University Colleges the opportunity of technical instruction in the industrial applications of certain branches of science."

THE Calendar of the Royal Technical Institute, Salford, contains much good advice to students, and many sound remarks upon objects and methods of study. In the day classes of the Institute, the number of hours per week allotted to each subject in the first year is as follows:—mathematics 6; general physics (including mechanics) 4; practical physics 3; electricity (theoretical) 2; electricity (practical) 2; theoretical chemistry 2; practical chemistry 3; practical, plane and solid geometry $2\frac{1}{2}$; drawing (freehand, model, &c.) 3; workshop practice 2; English and French 4; total $33\frac{1}{2}$. The second and third years' courses become more specialised according to the department which the student proposes to enter. There is no compulsory course of instruction for evening students. Students are free to select those classes which will help them to make progress in their particular trade or business. They are warned, however, against strictly confining themselves to such classes; it is pointed out that if they desire to gain a thoroughly sound knowledge in technical subjects, the study of them should be preceded by several of the pure and applied sciences. Thus, for example, little real progress can be made in applied mechanics without a knowledge of theoretical mechanics: or in machine or building construction without geometry; and unless the student undergoes systematic instruction in mensuration, arithmetic and mathematics, he will derive very little benefit from such subjects as steam, machine design, physics, &c. Mathematics has been aptly termed the alphabet of science, and students should not fail to acquire mathematical knowledge if they wish to make satisfactory progress in science and technology. The work of an Institute inspired with this spirit cannot fail to be of value.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, September 17.—M. Maurice Lévy in the chair.—Remarks relating to the decomposition of nitric esters and of nitroglycerine by alkalis, and on the relative stability of explosive materials, by M. Berthelot. In certain cases, instead of the production of the alcohol and nitrate as in the normal reaction, an aldehyde is formed, together with some nitrite. The results of M. Leo Vignon upon the nitrocelluloses confirm these views.—On the nomographic resolution of the equation of the seventh degree, by M. Maurice d'Ocagne.—On the deformations of contact of elastic bodies, by M. A. Lafay. Spheres of bronze and steel were studied and the amount of compression under varying loads measured by optical arrangements analogous to the Fizeau apparatus for the measurement of the expansion of crystals. The application of the theory developed by Hertz showed differences between the calculated and observed values which increased with the radius of the sphere. Since this divergence might possibly be due to the mutual friction of the surfaces in contact, experiments were made with oiled spheres, but the results were not affected by the lubrication.—Action of iodine and yellow oxide of mercury upon styrolene and safrol, by M. J. Bougault. Styrolene with iodine and mercuric oxide yielded an addition product, not obtainable pure, but apparently $C_6H_5 \cdot CHI \cdot CH_2 \cdot OH$, from which phenylacetic aldehyde was obtained by the action of silver nitrate. Safrol gives a similar addition product, but no aldehyde could be obtained from this by the action of silver nitrate.—On the reduction of the nitrocelluloses, by M. Leo Vignon. It has been shown in a previous paper that the nitration of cellulose yields, not nitrocelluloses, but nitro-oxycellulose containing an aldehyde group. With ferrous chloride, these bodies are reduced, the nitro-group being eliminated but the aldehyde group left intact. With ammonium sulphide, the reduction takes place in a different manner, cellulose or hydrocellulose being produced, substances without reducing action.

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